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OIPE JC2 FEB 28 2005 PATENT & TRADEMARK OFFICE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	10/073,931
Filing Date	February 14, 2002
Inventor(s)	Bharat Tarachand DOSHI et al.
Group Art Unit	2873
Examiner Name	Evelyn A. Lester
Attorney Docket Number	29250-000950/US

ENCLOSURES *(check all that apply)*

- ☒ Fee Transmittal Form
  - ☒ Fee Attached
- ☐ Amendment
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request (contained in Notice of Appeal)
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
- ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Assignment Papers *(for an Application)*
- ☐ Letter to the Official Draftsperson and _____ Sheets of Formal Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) _____
- ☐ After Allowance Communication to Group
- ☐ LETTER SUBMITTING APPEAL BRIEF AND APPEAL BRIEF (w/clean version of pending claims)
- ☒ Appeal Communication to Group *(Notice of Appeal, Brief, Reply Brief)*
- ☐ Proprietary Information
- ☐ Status Letter
- ☐ Other Enclosure(s) *(please identify below)*:

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm *or* Individual name	Harness, Dickey & Pierce, P.L.C.	Attorney Name John E. Curtin	Reg. No. 37,602
Signature			
Date	February 28, 2005		

PTO/SB/17 (12-04)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

FEE TRANSMITTAL for FY 2005

Effective 10/01/2004. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 500

Complete if Known	
Application Number	10/073,931
Filing Date	February 14, 2002
First Named Inventor	Bharat Tarachand DOSHI
Examiner Name	Evelyn A. Lester
Art Unit	2873
Attorney Docket No.	29250-000950/US

METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit Account Number: 08-0750

Deposit Account Name: Harness, Dickey & Pierce, PLC

The Director is authorized to: *(check all that apply)*
☐ Charge fee(s) indicated below ☐ Credit any overpayments
☐ Charge any additional fee(s) during the pendency of this application
☐ Charge fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1011	300	2011	150	Utility filing fee	
1012	200	2012	100	Design filing fee	
1013	200	2013	100	Plant filing fee	
1014	300	2014	150	Reissue filing fee	
1005	200	2005	100	Provisional filing fee	

SUBTOTAL (1) ($) 0

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

			Extra Claims		Fee from below		Fee Paid
Total Claims		-20 ** =	0	X		=	0
Independent Claims		-3 ** =	0	X		=	0
Multiple Dependent						=	0

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	50	2202	25	Claims in excess of 20
1201	200	2201	100	Independent claims in excess of 3
1203	360	2203	180	Multiple dependent claim, if not paid
1204	200	2204	100	** Reissue independent claims over original patent
1205	50	2205	25	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	120	2251	60	Extension for reply within first month	
1252	450	2252	225	Extension for reply within second month	
1253	1020	2253	510	Extension for reply within third month	
1254	1,590	2254	795	Extension for reply within fourth month	
1255	2,160	2255	1080	Extension for reply within fifth month	
1401	500	2401	250	Notice of Appeal	
1402	500	2402	250	Filing a brief in support of an appeal	500
1403	1000	2403	500	Request for oral hearing	
1452	500	2452	250	Petition to revive – unavoidable	
1453	1500	2453	750	Petition to revive – unintentional	
1501	1400	2501	700	Utility issue fee (or reissue)	
1502	800	2502	400	Design issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17 (q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	790	2809	395	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	790	2801	395	Request for Continued Examination (RCE)	
				Other fee (specify) ____	

*Reduced by Basic Filing Fee Paid SUBTOTAL (3) ($)500

4. SEARCH/EXAMINATION FEES

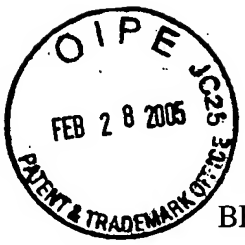
1111	500	2111	250	Utility Search Fee
1112	100	2112	50	Design Search Fee
1113	300	2113	150	Plant Search Fee
1114	500	2114	250	Reissue Search Fee
1311	200	2311	100	Utility Examination Fee
1312	130	2312	65	Design Examination Fee
1313	160	2313	80	Plant Examination Fee
1314	600	2314	300	Reissue Examination Fee

SUBTOTAL (4) ($)0

SUBMITTED BY — Complete *(if applicable)*

Name (Print/Type)	John E. Curtin	Registration No. (Attorney/Agent)	37,602	Telephone	(703) 668-8000
Signature				Date	February 28, 2005

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appeal No. _____

Appellants:	Bharat Tarachand DOSHI et al.
Application No.:	10/073,931
Group No.:	2873
Filed:	February 14, 2002
Examiner:	Evelyn A. Lester
For:	METHODS AND DEVICES FOR PROVIDING OPTICAL SERVICED-ENABLED CROSS-CONNECTIONS

Attorney Docket No.: 29250-000950/US

BRIEF ON APPEAL ON BEHALF OF APPELLANT

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314
Mail Stop Appeal Brief - Patents

February 28, 2005

03/01/2005 SSITHIB1 00000141 10073931
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TABLE OF CONTENTS

BRIEF ON BEHALF OF APPELLANT

In support of the Notice of Appeal filed February 15, 2005, appealing the Final Rejection mailed December 14, 2005, Appellant hereby provides the following remarks.

I. REAL PARTY IN INTEREST

The present application is assigned to Lucent Technologies Inc., by an Assignment recorded on February 14, 2002, Reel 012591, Frame 0491.

II. RELATED APPEALS AND INTERFERENCES

The Appellant does not know of any appeals or interferences which would directly affect or which would be directly affected by, or have a bearing on, the Board's decision in this Appeal.

III. STATUS OF THE CLAIMS

The claims reproduced in the attached Appendix A are the claims on Appeal. Each of these claims is currently pending in the application.

IV. STATUS OF ANY AMENDMENTS FILED SUBSEQUENT TO THE FINAL REJECTION

A Request for Reconsideration ("Request") dated February 15, 2005 was filed with the U.S. Patent and Trademark Office in response to the Final Rejection. Appellants presume this Request will be entered and considered.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Today, when voice, data or video communication signals are transmitted from one location to another the chances are high that such communications will be sent via an optical fiber network. So-called "ultra, long-reach" ("ULR") optical fiber networks are in the planning stages or just being built. ULR networks are characterized by their ability to transmit signals extremely long distances without the need to process the signals other than simple amplification.

The advantages offered by ULR networks are many. First, signals within links of a ULR network can go extremely long distances without being processed. The fewer times a signal needs to be processed, the less expensive the link will be when built and operated. (See Specification, page 1.)

Because processing is not needed to be done as often, it is possible to process signals from multiple links using the same processing equipment.

Unfortunately, the advantages offered by ULR networks have not been realized because the design of so-called electronic "cross-connection" equipment has not evolved to take these advantages into consideration. For example, existing electronic cross-connection designs still require that an individual processing unit (e.g., an optical-to-electrical-to-optical ("OEO") regenerator) be dedicated to each wavelength within a link. This is a potential waste of resources because signals within a ULR link may not need to be processed at all at any given "node."

Utilizing existing electronic cross-connection equipment to process signals from ULR links has other inherent drawbacks. When GEOs are used, it means the optical network is not "transparent". That is, the transmitters and receivers used in such a network must be capable of sending and receiving signals compatible with one or more specific electrical/electronic-based "protocols". Only signals formatted to fit such protocols will "pass through" the network. In contrast, when OEOs are not used the network remains transparent; capable of passing any number of optical signals regardless, for the most part, of the protocol or bit rate used.

It follows, then, that it makes little sense to utilize existing cross-connection designs to process signals from a ULR link when such processing is not needed and when such processing converts a transparent ULR link into a non-transparent link.

The present invention provides for methods and devices that improve cross-connections, for example, an optical connection device that comprises one or more optical processing units and an optical switch adapted to connect at least one of the units to one or more optical signals based on a characteristic of each signal. Only when the characteristics of a signal indicate that processing is needed is a processing unit connected to the signal. As such, units are no longer dedicated to each signal. This reduces the cost of the overall network, among other things. (See Specification, pages 2-4.)

The processing unit may comprise a regenerator, Raman pump, dispersion equalization/compensation unit or a performance monitor of some sort.

One example, or embodiment, of the present invention is shown in FIG 1 (Appendix B).

As shown, an optical, service-enabled connection unit 10 is adapted to dynamically process one or more optical signals from one or more links d_1, $d_{2\text{-in}}$, or d_3 based on a characteristic of each signal within links d_1, $d_{2\text{-in}}$, or d_3. It should be understood that by "signal" is meant either a signal comprising a single wavelength or one comprising multiple wavelengths, multiple signals.

As will be recognized by those skilled in the art, connection units, such as connection unit 10 envisioned by the present invention, may act as an "optical layer service node" capable of performing a wide variety of services and/or functions. Such a node is capable of providing any number of processing features, such as signal regeneration, Raman pumping, wavelength conversion, signal characteristic processing and performance monitoring (i.e., during the set-up phase of a link, etc... determining if signal processing is needed, e.g., bit error rate testing, etc...) to name a few examples. Connection unit 10 is shown comprising a switch 40 and a plurality of

processing units 51-m, where "m" is the last unit. Taken together the processing units 51-m may be referred to as a "bank" 50 of processing units. When located at a cross-connection point the unit 10 may be referred to as a "cross-connection device" though it should be understood that units, like unit 10, envisioned by the present invention may be used at any node along a link as well. As envisioned by the present invention the optical switch 40 is adapted to dynamically connect and/or disconnect one or more of the processing units 51-m to one or more optical signals within links d_1, $d_{2\text{-in}}$, and/or d_3. For ease of understanding, the inputs and outputs corresponding with signal d_2 have been labeled $d_{2\text{-in}}$ and $d_{2\text{-out}}$. (See Specification, pages 4-5.)

For purposes of this example, it will be assumed that all three links approach the optical switch 40 from different directions; link d_1 from the east, $d_{2\text{-in}}$ from the north, and d_3 from the south.

Though shown as two separate units in FIG. 1, it should be understood that the optical switch 40 and bank 50 may be combined into a single unit or further broken down into additional units.

As stated before the optical switch 40 is adapted to connect or disconnect one or more of the processing units 51-m to one or more of the optical signals within links d_1, $d_{2\text{-in}}$, and/or d_3 based on characteristics of each signal. Sometimes one unit 51-m may be connected to a single link and/or sometimes one unit 51-m may be connected to more than one link/signal at a time. Whatever the case, none of the units 51-m are solely dedicated to one link.

The characteristics of a signal may be measured or otherwise detected by the switch 40 or, more commonly, they may be measured by other network equipment. In the latter case, once the characteristics are measured, a centralized or partially distributed network management

system (not shown in FIG. 1) is adapted to send instructions or the like to switch 40 via pathway 60.

In an illustrative embodiment of the present invention, an optical signal within links d_1, $d_{2\text{-}in}$, or d_3 will only be processed (i.e., connected to a processing unit 51-m) if the optical switch 40 receives an instruction via pathway 60 to do so. In this way, if any signal is a part of a link from within a ULR network it will not be connected (or disconnected) via switch 40 to a processing unit 51-m unless the ULR network sends an instruction to the optical switch 40 via pathway 60. This avoids the needless connection of an optical signal to one or more processing units 51-m.

In one embodiment of the present invention, one or more of the signal processing units 51-m may comprise a regenerator (e.g., OBO) adapted to regenerate or "boost" the optical signal-to-noise ratio ("SNIR") of signals within links d_1, $d_{2\text{-}in}$, or d_3. Thus, if the optical SNR of a signal needs to be increased, the optical switch 40 is adapted to connect and/or disconnect a processing unit 51-m to the signal. In this way, even though none of the units 51-m are dedicated to a single signal, the optical SNR of a signal may nonetheless be increased. In one embodiment of the present invention, this connection/disconnection is done electronically, not manually, making it a lot easier for those monitoring/maintaining such a link to connect/disconnect processing units. (See Specification, pages 5-7).

In a further embodiment of the present invention, one of the optical signals may be a signal which is in need of wavelength conversion. For example, the optical switch 40 may alternatively connect and disconnect a signal $d_{2\text{-}in}$ to one or more processing units 51-m via pathway D_{IN}. In turn, one or more of the processing units 51-m may be adapted to change the

wavelength of signal $d_{2\text{-in}}$ and output such a converted signal to switch 40 or another port (not shown) via pathway D_{OUT}.

In yet additional embodiments of the present invention, one or more of the processing units 51-m may comprise a Raman pump adapted to amplify all signals within an optical link d_1, $d_{2\text{-in}}$, or d_3 connected to switch 40.

It should be understood that processing units 51-m may all be the same type or may comprise any number of different types of processing units. It should be further understood that the type of processing unit 51-m which is connected or disconnected by switch 40 to a given link depends on the type of characteristic needing adjustment. For example, processing units' 51-m may comprise all OBOs or a combination of Raman pumps and OE0s. In addition, the processing units 51 -m may comprise other types of processing elements such as: optical-to-optical-to-optical ("000") dispersion equalization/compensation units, gigabit Ethernet units, SDL units, SONET/SDH units, 2R (re-shape and re-amplify without retiming) units, 3R (re-shape and re-amplify and retime) units, to name just a few examples. In the case where the optical switch 40 connects an 000 to a link d_1, $d_{2\text{-in}}$, or d_3, or where the unit 10 determines that no GEG is needed, the transparency of such a signal/link is maintained because no optical-to-electrical conversions occur.

It should be understood that the number of optical links input into switch 40 is typically more than three and typically numbers in the hundreds or thousands. Again, though this is so it should be understood that unlike conventional systems, none of the processing units 51-m needs to be dedicated to a single signal or link. Therefore, the number of processing units 51-m can be

substantially reduced. This reduction in processing units helps reduce the costs of the connection unit 10 and any network it is a part of. (See Specification, pages 7-8.)

Though not shown in FIG. 1, those skilled in the art will realize that, depending on the type of processing unit 51-m making up bank 50, multiplexing and/or demultiplexing of the signals within links d_1, $d_{2\text{-in}}$, and d_3 may be necessary. In general, when units 51-m comprise regenerators multiplexing/demultiplexing will be required to insure a single wavelength at a time is eventually sent by switch 40 to bank 50. This may be accomplished before signals from links d_1, $d_{2\text{-in}}$, or d_3 are input into the switch 40 (e.g., by a separate device/unit) or may be done by the switch itself.

In contrast, when the units 51-m comprise Raman pumps or dispersion/compensation units no multiplexing/demultiplexing is needed. In effect, these types of units are capable of handling multiple signals of differing wavelengths from each link d_1, $d_{2\text{-in}}$, and d_3. It can be said that those units operate "fiber by fiber" while regenerators work "wavelength by wavelength".

The connection unit 10 may alternatively be made a part of a "router", such as the Wavestar Lambda router made by Lucent Technologies, Inc.

In the claims which follow it should be understood that by "connect" is meant the connection and/or disconnection of one or more of the units 51-m to one or more optical signals or links via switch 40. (See Specification, page 9.)

Appellants respectfully note that the above summary of the invention, including any indication of reference numerals, drawings, figures, paragraphs, page numbers, etc. (collectively referred to as "descriptions" of the application) have been provided solely to comply with the U.S. Patent and Trademark Office's rules concerning the appeal of the claims of the present

application. As such, the descriptions above are merely exemplary and should not be construed to limit the claims of the present application in any way whatsoever.

VI. ISSUES TO BE REVIEWED ON APPEAL

(i) Whether claims 1-15 are unpatentable based on 35 U.S.C. §112, first paragraph?

(ii) Whether claims 1, 4-6, 9-11, 14 and 15 are anticipated by U.S. Patent No. 5,726,788 to Fee ("Fee")?

(iii) Whether claims 2, 7 and 12 are obvious based on a combination of Fee with U.S. Patent No. 6,624,972 to Wang ("Wang")?

(iv) Whether claims 3, 8 and 13 are obvious based on a combination of Fee and U.S. Patent No. 6,331,906 to Sharma ("Sharma")?

VII. ARGUMENTS

A. The Section 112 Rejections

Claims 1-15 were rejected under 35 U.S.C. §112, first paragraph, the Examiner stating that the term "non-amplified" optical signals in claims 1 and 11 are not supported by the original disclosure. Appellants respectfully disagree and traverse these rejections for at least the following reasons.

The present specification makes numerous references to ultra-long range (ULR) optical fiber networks. Such networks are distinguished by the ability to transmit optical signals over extremely long distances. Because of this fact (and others) it is not always necessary to amplify an optical signal before it is input into, or output from, the claimed connection devices of the present invention.

The specification indicates that the advantages offered by ULR networks have not been realized because existing cross-connection equipment has not evolved to take these advantages into consideration. For example, existing electronic cross-connections still require that an individual processing unit, such as an optical-to-electrical-to-optical regenerator, be dedicated to each wavelength within a link. This is a potential waste of resources because the ULR link may not need to be processed at all at any given node (see page 2, paragraph 0005 of the specification).

Said another way, an optical signal level within a ULR may be sufficient and not need amplification when it is received by an optical switch or processing unit of the present invention.

Accordingly, Appellants respectfully submit that the specification provides adequate support for the addition of the terms "non-amplified" optical signals in claims 1 and 11.

Accordingly, Appellants respectfully request that the Board reverse the decision of the Examiner and grant allowance of claims 1-15.

B. <u>The Section 102 Rejections</u>

Claims 1, 4-6, 9-11, 14 and 15 were rejected under 35 U.S.C. §102(e) as being anticipated by Fee. For at least the following reasons, Appellants believe the Examiner is incorrect and traverse these rejections.

Independent claims 1, 6 and 11 include, among other things, an optical switch which is adapted to connect at least one processing unit to one or more, non-amplified optical signals based on a characteristic of each signal. It is not necessary for the claimed inventions to receive an amplified signal.

In contrast, Fee requires the reception of an amplified optical signal (see Figures 3 and 7; and at least column 4, lines 30-40).

Accordingly, Fee does not disclose each and every feature of the claimed invention and cannot therefore anticipate the claims of the present invention. Appellants respectfully request that the Board reverse the decision of the Examiner and grant allowance of claims 1, 4-6, 9-11, 14 and 15.

C. The Section 103 Rejections

Claims 2, 7 and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fee in further view of Wong. For at least the following reasons, Appellants disagree and traverse this rejection.

It is respectfully submitted that these claims are patentable over the combination of Fee and Wong for the reasons set forth with respect to independent claims 1, 6 and 11, from which these claims depend.

Claims 3, 8 and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fee in further view of Sharma. Appellants respectfully disagree and traverse this rejection for at least the following reasons.

Claims 3, 8 and 13 are at least patentable over the combination of Fee and Sharma for the reasons set forth with respect to independent claims 1, 6 and 11, respectively.

In addition, it is respectfully submitted that one of ordinary skill in the art would not be motivated to combine Fee with Sharma because to do so would render either Fee, Sharma, or both unsatisfactory for their intended purposes. Fee explicitly states that there is no conversion of an optical signal to an electrical signal and back to an optical signal (see Abstract, lines 6 and

7). In other words, Fee explicitly disavows the use of an optical-to-electrical-to-optical (OEO) converter, which is required by claims 3, 8 and 13. Of the modules 302 shown in Fee that can be connected with optical switch backplane 308, none are an OEO because there is no such conversion of an optical-to-electrical-to-optical signal. It is respectfully submitted that one of ordinary skill in the art would not combine the disclosures of Fee and Sharma because to do so would render Fee inoperable for its intended purpose (i.e., Fee would have to be modified to add an OEO converter, thus destroying Fee's intended purpose of not requiring an OEO).

Accordingly, Appellants respectfully request that the Board reverse the decision of the Examiner and grant allowance of claims 2, 3, 7, 8, 12 and 13.

IX. CONCLUSION

Accordingly, for at least the aforementioned reasons, Appellants respectfully request that the Honorable Members of the Board of Patent Appeals and Interferences reverse each of the outstanding rejections in connection with the present application and allow each of the pending claims in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No.08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By: _____

John E. Curtin, Reg. No. 37,602
P.O. Box 8910
Reston, Virginia 20195
(703) 668-8000

JEC:psy

APPENDIX A

1. (Previously Presented) A connection device comprising:

one or more processing units; and

an optical switch adapted to connect at least one of the units to one or more non-amplified optical signals based on a characteristic of each signal.

2. (Original) The device as in claim 1 wherein the at least one unit comprises a Raman pump.

3. (Original) The device as in claim 1 wherein the at least one unit comprises an optical-to-electrical-to-optical regenerator.

4. (Original) The device as in claim 1 wherein the at least one unit comprises a dispersion equalization/compensation unit.

5. (Original) The device as in claim 1 where the at least one unit comprises a performance monitor.

6. (Previously Presented) A router comprising:

one or more processing units; and

an optical switch adapted to connect at least one of the units to one or more non-amplified optical signals based on a characteristic of each signal.

7. (Original) The router as in claim 6 wherein the at least one unit comprises a Raman pump.

8. (Original) The router as in claim 6 wherein the at least one unit comprises an optical-to-electrical-to-optical regenerator.

9. (Original) The router as in claim 6 wherein the at least one unit comprises a dispersion equalization/compensation unit.

10. (Original) The router as in claim 6 wherein the at least one unit comprises a performance monitor.

11. (Previously Presented) A method for providing an optical, service-enabled connection comprising:

connecting at least one of a number of processing units to one or more non-amplified optical signals based on a characteristic of each signal.

12. (Original) The method as in claim 11 wherein the at least one unit comprises a Raman pump.

13. (Original) The method as in claim 11 wherein the at least one unit comprises an optical-to-electrical-to-optical regenerator.

14. (Original) The method as in claim 11 wherein the at least one unit comprises a dispersion equalization/compensation unit.

15. (Original) The method as in claim 11 wherein the at least one unit comprises a performance monitor.